Applied Agricultural Economics

Prepared for the
FmHA Training Program
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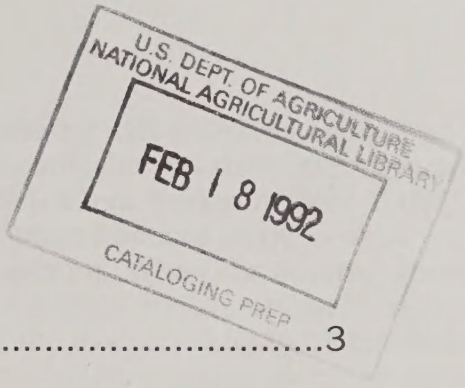

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Applied Agricultural Economics

Some of you may be wondering why a session on applied agricultural economics is included in this training program, and why is it important to FmHA lenders. Certainly most of this training session will focus on the financial analysis of an individual farm or ranch operation. When considering whether or not to approve a loan application, we are primarily interested in the process of collecting and evaluating financial information on a single farming operation, arriving at a proper loan decision, and implementing procedures for closing and monitoring the loan correctly.

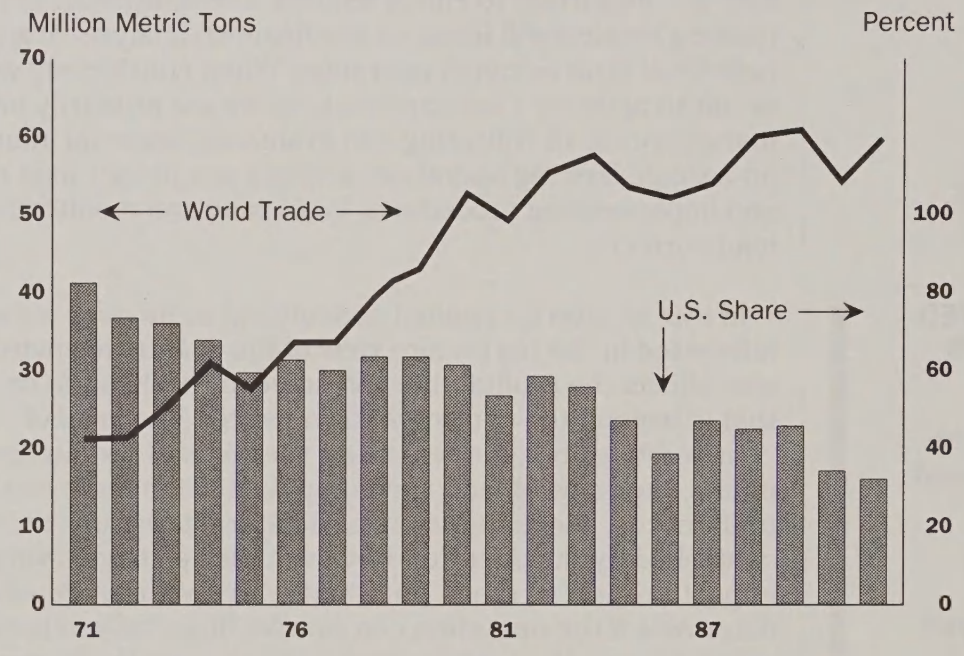
TOPICS FOR APPLIED AG ECONOMICS

- **How U.S. Agricultural Commodities Fit Into the World Supply and Demand Picture**
- **Financial Management**
- **Commodity Price Analysis**
- **Marketing**
- **Production Costs**
- **Asset Values**
- **How Environmental Policies Affect Borrowers and Lenders**

In this session on applied agricultural economics we are interested in the big picture view of the economic environment that affects the profitability and solvency of the farm or ranch that is beyond the control of the operator. The level of commodity prices, interest rates, the costs of production inputs, the value of land and equipment, changes in consumer preferences, and government agricultural programs are not controlled by the operator. However, they all have a very large impact on farm or ranch profitability, and ultimately may determine if the operation can survive financially in the long run. Just as a rising tide raises all the ships in the harbor, irrespective of the skill of the ship's captain, so the agricultural economic environment either makes it easier or harder for farm and ranch managers to avoid the rocks of financial failure.

The topics we will discuss in this section on agricultural economics include: how U.S. agricultural commodities fit into the world supply and demand picture, financial management, commodity price analysis, marketing, production costs, asset values, and how environmental policies affect borrowers and lenders.

Figure 1. World Soybean Trade and U.S. Share



Agriculture in the World Perspective

U.S. Commodities in World Trade

American farmers and ranchers have the ability to produce far more wheat, corn, soybeans and other commodities than we can consume in the U.S. The investments we have in Land Grant institutions in research, teaching, and extension, combined with a very productive land resource and accommodating climate, have created a very efficient and productive agricultural sector. The commodities we produce that exceed our domestic requirements are available for export, and exports play an extremely vital role in American agriculture. A very large percentage of our annual production of the major crops are exported. In addition, we export a very large share of the total world supply available for export. In Figure 1, for example it shows that in 1971 the U.S. provided 90 percent of the world trade in soybeans but in 1990 provided only 25 percent. As other countries, particularly Brazil, increased their production of soybeans, and improved their export capabilities, they increased their market share of total soybean exports.

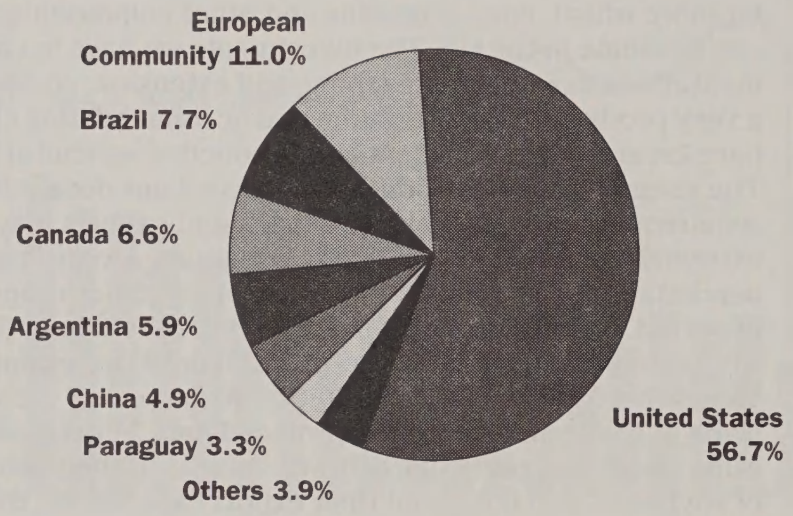
Canada, Brazil, Australia, and the European Community are among the other major exporting countries that produce more than they consume. In Figure 2 notice the major exporters of oilseeds include the U.S., the European Community, Brazil, and Canada. In Figure 3, the major exporters of coarse grains include again the U.S., the European Community, Agentina, China and Canada. If we look at the U.S. share of the total, we see that the American farmers provide a very large share. The countries that import agricultural commodities, particularly the U.S.S.R., Japan, and other countries in the Pacific Basin, use our exports to offset the difference between their annual production and their domestic demand. The U.S.S.R. is a good example of a country that turns to the world market to make up shortfalls in their domestic production. When they have big crops their demand for imported commodities falls, and conversely, when they have poor crops, their demand increases. Figure 2 shows the European Community is a large importer of oilseeds, and Figure 3 indicates Japan and the USSR are large importers of coarse grains.

Government Policy Objectives

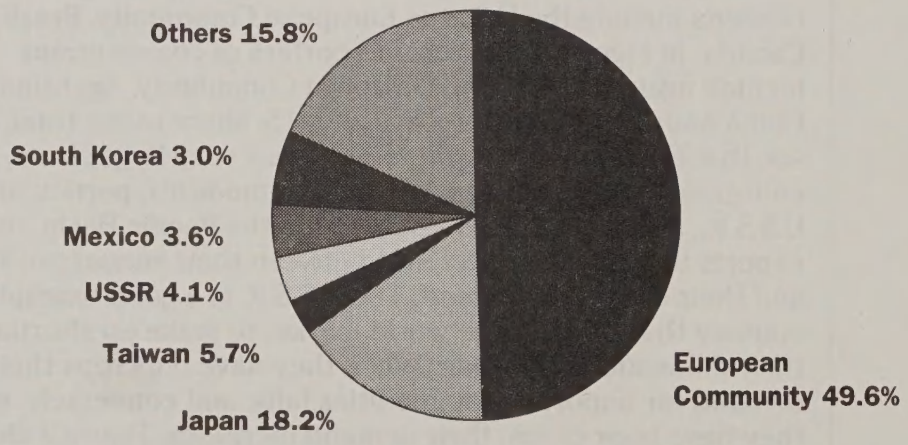
The U.S. is very dependent on the export market as a source of demand for the agricultural commodities we produce. In general, we favor free access to foreign markets for our commodities. We would argue that foreign markets should be accessible to our commodity exports without the

Figure 2: Oilseeds Trade

Leading Exporters
Share of total world exports, 1987/88



Leading Importers
Share of total world imports, 1987/88



imposition of tariffs, or quotas, or other mechanisms that restrict free trade. However, countries that import agricultural commodities often have a different view. Certainly any money they spend on imported commodities has a negative effect on their balance of payments. And, often they want to protect their own agricultural producers from imports that might be priced below their own cost of production. If you have been watching the recent negotiations of the Uruguay round of the General Agreement on Tariffs and Trades (GATT), you have noticed how the major exporting countries, and the major importing countries differ over issues of free markets and subsidies paid to their agricultural producers. The major exporting countries, those who produce more than they consume domestically, argue that free trade needs to be encouraged, and domestic farm subsidies need to be reduced to promote greater worldwide efficiency in the use of agricultural resources. However, importing countries generally do not want to pay large bills for imported commodities; they worry about losing self sufficiency in food production, and want to protect their own agricultural industries from "unfair" competition.

The major exporting countries, argue that free trade needs to be encouraged, and domestic farm subsidies need to be reduced to promote greater worldwide efficiency in the use of agricultural resources.

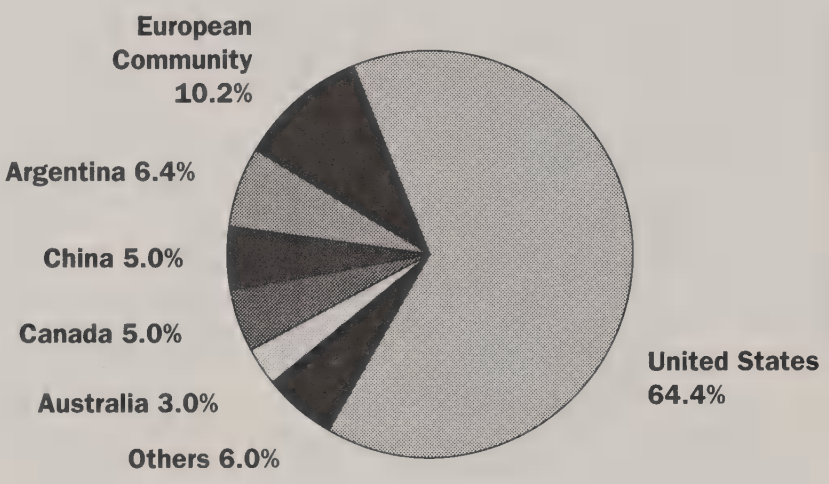
This generalization of policy objectives of exporting and importing countries is a bit too simplistic in the real world however. Even large exporters of some agricultural commodities are large importers of other commodities.

The major importing countries generally do not want to pay large bills for imported commodities; they worry about losing self sufficiency in food production, and want to protect their own agricultural industries from "unfair" competition.

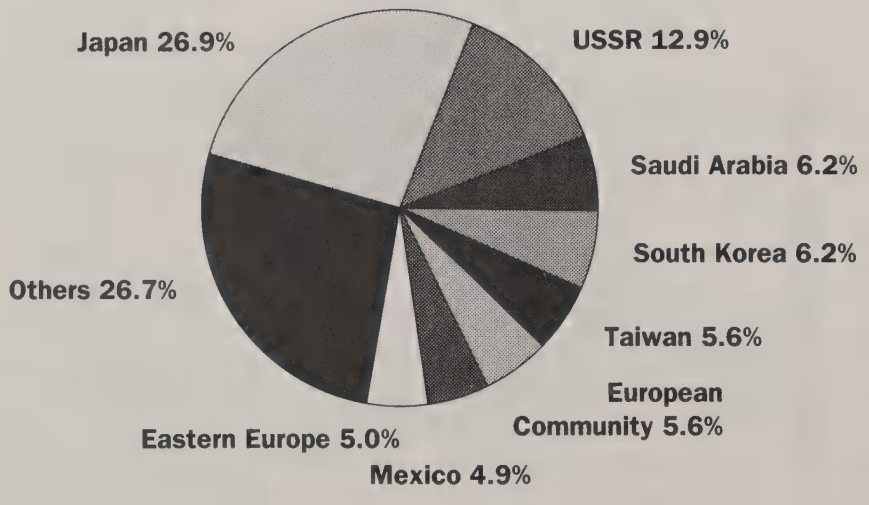
If the rules change regarding access to commodity markets, then the prices of these commodities are likely to change dramatically. Changing the rules of trade can greatly affect prices, raising or lowering, the prices of commodities in your loan portfolio, and the income that is supposed to be available to pay back the loan. Major commodity exports were increasing very dramatically during the 1970s, and had a very positive impact on U.S. commodity prices. Then in about 1981, commodity exports began to fall, and commodity prices also began falling. Several factors are involved in the relationship between the reduction in exports and falling prices. Those factors include exchange rates, inflation rates, and the health of the world economies. Assuming that exports would continue to rise and continue to provide strong support to commodity prices was a mistake that caused many producers and their lenders severe financial stress in the 1980s.

Figure 3. Coarse Grains Trade

Leading Exporters
Share of total world exports, 1987/1988



Leading Importers
Share of total world imports, 1987/1988



U.S. farm policy attempts to stabilize farm income through the use of income subsidies, cropland retirement, price supports, and export enhancement programs.

U.S. Agricultural Policy

Most of you are familiar with U.S. agricultural policy as it is described in the 1990 Food and Agricultural Protection Act. The general objectives of the U.S. farm policy attempt to stabilize farm income through the use of income subsidies, cropland retirement, price supports, and export enhancement programs. Excessive production, particularly in the major crops, has more often been a problem than is lack of production. As commodity supplies exceed consumer demand, inventories increase, and commodity prices drop. Low crop prices often lead to agricultural policies that attempt to reduce production by withdrawing land from production or by reducing the acreage of a crop that is protected by a price supporting mechanism. Those of you who are old enough, probably remember the soil bank that was implemented to reduce the crop acreage under cultivation. The current farm program imposes acreage reduction requirements and set asides on producers to lower acreage planted to the major commodities. The Conservation Acreage Reserve Program also reduces the amount of land available for production and provides an added benefit of protecting highly erodible land.

U.S. agricultural policy also encourages exports through a variety of export credit programs, and by supporting commodity organization in market promotion programs in importing countries. We also have a long history of providing commodities to needy countries under grants or other low cost programs, such as P.L. 480.

The details of how the Act specifically affects the commodities you are interested in would require much more time than is available in this session. It is important for you to be familiar with the provisions that affect the commodities in your loan portfolio, and for you to determine if changes in the Act are favorable or unfavorable to the prices of commodities your producers are marketing. Be sure to monitor how changes in the program will affect your loans, and determine the financial risks if your producers decide not to participate in the program.

Farm Program Affects on Net Income

Lenders should be particularly interested in the direct government payments to producers who participate in programs designed to maintain farm income. As shown in Table 1, government program payments have been an extremely important source of farm income, comprising as much as 29 percent of total farm income in 1987, and as little as 6 percent in 1981. Program payments attempt to smooth out the dips in cash receipts by increasing when cash receipts are low, and decreasing when receipts are high. This, of course, is an expected pattern because policy makers respond to low farm income by implementing programs that provide producers with income protection when they need it most. Programs to provide income support do not anticipate poor income years, but usually lag a year or so. It takes time to recognize problems of low income in the agricultural sector, and implement programs to respond by increasing government program payments. This lag in program response can be very unsettling to both lenders and producers because both may need to get through several very tough low income years with low debt repayment ability before larger program payments take affect.

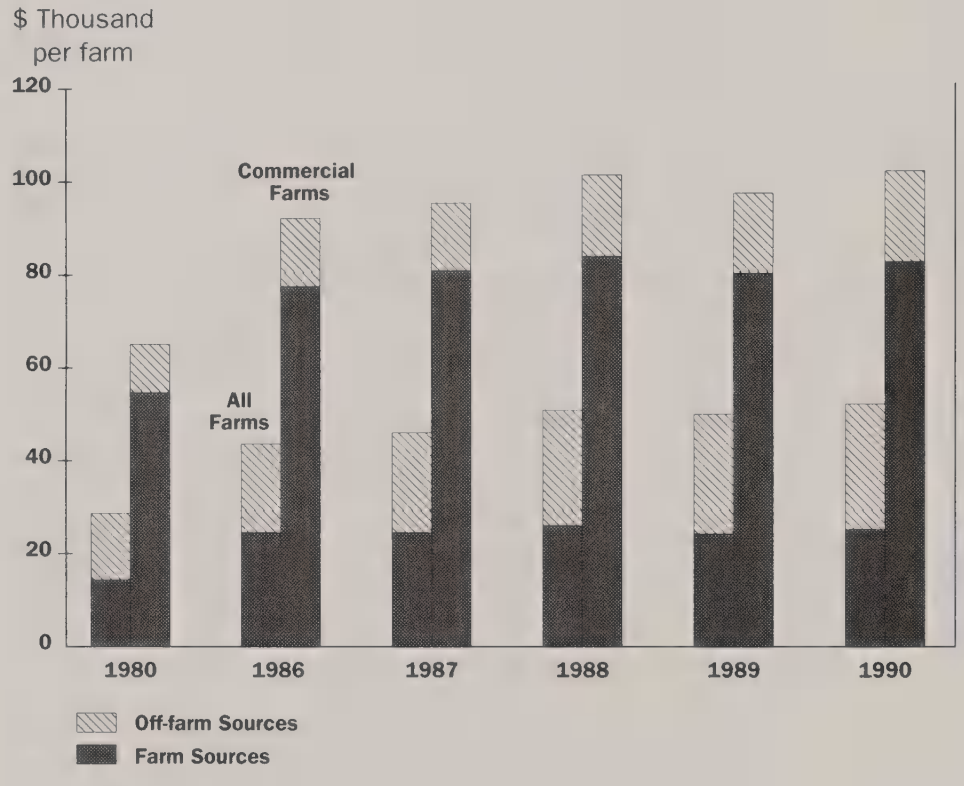
Most U.S. farm programs are designed to provide price stability and income protection to crop producers, not to livestock producers. No one has heard of deficiency payments for hog or cattle producers. However, better price stability in the corn and soybean markets as a result of government programs is an advantage to livestock producers because it lowers their market risk and cost of production. Many livestock producers also grow crops and receive payments on the crops they grow. Dairy farmers are an example of one group of livestock producers who are greatly affected by government programs and receive price protection through a variety of policy mechanisms to stabilize their income.

Table 1. Government Program Payment Contributions

($ Billions) *Forecast

	1981	1982	1983	1984	1985	1986	1987	1988	1989	*1990	*1991
Farm Receipts	144	147	141	147	149	140	146	156	167	174	177
Direct Govt. Payments	1.9	3.5	9.3	8.4	7.7	11.8	16.7	14.5	10.9	9.0	8.0
Gross Cash Income	146	151	151	156	157	152	164	170	178	184	185
Cash Expense	113	113	111	119	109	105	108	112	122	125	127
Net Cash Income	32.8	37.9	39.5	36.6	47.9	46.7	56.1	58.1	54.6	59.0	55.0
Off-Farm Income	36	36	37	39	55	55	57	58	58	–	–
Direct Govt. Payments as Percent of Net Cash Income	6	9	24	23	16	25	29	25	20	15	15

Figure 4. Non-Farm Income As Source of Total Income



Non-Farm Income vs. Farm income.

Non-farm income has been an increasingly important source of income to farm and ranch families over the past decade. As shown in Figure 4, off-farm sources of income contribute about 50 percent of total income when all farms are considered. If only commmercial farms are considered, that is, farms with sales in excess of $40,000 per year, off-farm sources contribute about 20 percent to the total income. Lenders are very interested in the non-farm income of their borrowers since it may represent a very important source of debt repayment for the loan. Generally non-farm income is not affected by poor weather or low prices, and may provide a relatively stable source of income for the farm or ranch operations.

However, there are some risks that might reduce the non-farm income the borrower was planning on to help repay farm or ranch debt. Off-farm income is often provided primarily by one spouse. Death, divorce, or a loss of the job could bring the non-farm income to zero very quickly. To make matters worse, divorce often increases the living expenses needed to be paid from farm income.

High levels of off-farm income can also reduce farm income if the off-farm job requirements interfere with the timeliness of farm operations, reduce the operator's attention to the marketing of farm production, or cause the absence of the farm operator during critical periods such as the planting or harvesting seasons.

Financial Management

Goal Setting, Budgeting, Market Planning

How many times have you seen a borrower take proceeds from the sale of a crop, and use them to buy a new four-wheel-drive pickup, then find he can't figure out why no money is left over to pay the operating loan back? We have a problem with goal setting, budgeting, and financial management and most farmers and ranchers have the same problems. Very few farmers and ranchers can give a concise answer when asked what their goals are, and even fewer of them have a written copy of their goals. A few farmers keep financial records, but far fewer develop a financial plan that shows a projection of income and expenses for the coming year. Without a plan identifying where the operation wants to be in the future, and a budget for getting there, it's pretty easy for pickup trucks to get in the way of loan payments.

Equally important is a marketing plan that establishes price objectives and triggers actions such as forward contracting or futures transactions when price objectives can be met in the market. Encourage your producers to join marketing clubs that study the markets and structure marketing programs with their members. There are plenty of resources available to help organize marketing meetings available through county extension agents, Land Grant University marketing specialists, elevator operators, and commodity brokers. By exchanging marketing ideas with these people and other producers, your borrowers will increase their marketing skills, hopefully their marketing performance, and the result is more debt repayment dollars.

Increasing the Size of the Business

When you are helping your borrowers think through the goals they want to accomplish, you will probably notice one of the most often stated goals is to get bigger, farm more acres, raise more cattle, or add new enterprises. Certainly if they want to borrow more money, expanding the business sounds like a good place to put the money. However, your borrowers may also want to consider other goals that do not cost more money. If increasing net after tax income is one goal, reducing expenses or increasing income from the same resources are ways to achieve it, rather than increasing the size of the business. Non financial goals are also important to consider, such as bringing children into the operation with some financial accountability,

or transferring the business to the children sometime in the future. Without a plan, and a financial budget to accomplish the plan, farm and family goals will be much harder to accomplish. A lot of effort may be wasted and poor financial decisions may be made that will make the final objectives harder to attain.

Once the goals are established, the plan to accomplish the goals is fairly easy to develop. Decisions on whether to buy or rent additional acreage can be evaluated based on what the operator is really trying to achieve, not the rather vague goal of increasing the size of the business. And, be sure the operator considers non-farm investments as a strategy for building future financial security. Diversifying investments helps to spread investment risks just as production diversification helps spread the risk associated with growing agricultural commodities.

Financial Management Information Systems

Those who expect to survive in agribusiness need to be less concerned about "keeping records" and become much more involved in maintaining "financial information". Each piece of information recorded should serve a specific need and contribute a fragment to the complete financial management system. The system must provide comprehensive information for the effective management of three specific business areas; profit, credit, and taxes.

Most accounting systems have placed the emphasis on keeping records to satisfy the Internal Revenue Service. However, records geared to taxes are of little value for the businessman interested in increasing profits and securing credit. If a business doesn't make a profit, it doesn't have to worry about paying taxes, and after several years of losses won't be able to secure adequate credit. Clearly, the number one function of any financial management system must be to provide the producer with financial information that can be used to make profitable day to day business decisions.

INFORMATION FOR PROFIT

For effective management of the business for profit the financial management system must:

- Identify trends of the business, both favorable and unfavorable.
- Provide for comparison of production costs for the same periods of time in prior years.
- Provide a documented history for projecting the future.
- Identify total break-even cost (production costs, depreciation, family living expenses, partnership draws or corporation dividends, and income tax) to assist in determining marketing price objectives.
- Identify cash flow demands to assist in developing a marketing strategy.
- Prepare cash-flows for a minimum of two to five years in advance.
- Chart the actual performance versus the planned budgets.
- Project the financial impact of any business expansion.

INFORMATION FOR CREDIT

To obtain adequate credit, the financial system must meet the producer's need to:

- Prove profitability thereby justifying credit.
- Prove the use of credit will be profitable for the business.
- Assure the lender that, baring unforeseen natural disaster, the business has the capacity to generate profits sufficient to repay the credit.
- Assure the lender that should some natural disaster or other unforeseen problem arise, the business has sufficient assets to adequately collateralize the credit.

After credit has been obtained, the financial management system must serve to assist the producer in credit management.

The financial system must:

- Identify the short term, intermediate term, and the long term debt.
- Demonstrate that profits are sufficient to repay debt as agreed, plus provide for reasonable living costs.

INFORMATION FOR PROFIT

- **Identify trends of the business**
- **Provide for comparison of production costs**
- **Provide a documented history for projecting**
- **Identify total break-even cost**
- **Identify cash-flow demands**
- **Prepare cash-flows for a minimum of two to five years in advance**
- **Chart the actual performance versus the planned budgets**
- **Project the financial impact of any business expansion**

INFORMATION FOR CREDIT

- **Prove profitability**
- **Prove the use of credit will be profitable**
- **Assure the lender the business has the capacity to generate profits sufficient to repay the credit**
- **Assure the lender that the business has sufficient asset to adequately collateralize the credit**

CREDIT MANAGEMENT

- **Identify the short, intermediate, and long term debt**
- **Demonstrate profits are sufficient to repay debt plus reasonable living costs**
- **Include debt repayment schedules in long range cash-flow**
- **Identify pledged assets**

- Include debt repayment schedules in long range cash flow.
- Identify assets as pledged or not pledged for collateral.

INFORMATION FOR TAXES

To satisfy the tax needs of the business, the financial management system must provide for:

- Tax planning to assure paying the lowest possible tax.
- Assistance in preparation of tax forms.
- Complete separation of business and non-business expenses and income.
- Accommodate any type of business structure (sole proprietorship, partnership, corporation, etc.).
- Up-to-date market basis Statement of Financial Condition for Estate Tax planning.
- Up-to-date cost basis Statement of Financial Condition for Income Tax planning.

INFORMATION FOR TAXES

- **Tax planning**
- **Assistance in preparation of tax forms.**
- **Complete separation of business and non-business**
- **Accommodate any type of business structure**
- **Up-to-date market basis Statement of Financial Condition for Estate Tax planning.**
- **Up-to-date cost basis Statement of Financial Condition for Income Tax planning**

DOUBLE ENTRY VERSUS SINGLE ENTRY ACCOUNTING

In the past, most of American agriculture has used an antiquated and outmoded system of financial information — the single-entry accounting system. The business and accounting community did not throw out the single-entry accounting system years ago, it was discarded decades ago. Single-entry accounting is woefully inadequate for financial and decision making information. The single-entry accounting system can often create tremendous problems. This is especially true if the system is computerized. The difference between a single entry and a double entry system is essentially one of checks and balances. A double-entry accounting system has a debit and credit, or deposit and withdrawal, for every entry. For example, if a check is written for seed, there is an increase to the seed expense in the ledger and a decrease to cash. By maintaining the relationship between cash and revenue or expenditures, we assure the ledger totals balance with cash. A true double-entry system must always balance to cash both, for the current month and year to date. Without the checks and balances of double-entry, no system is accurate enough to be used for

financial and other decisions that relate to profits, credit, and taxes. The example below shows how a normal double-entry system balances to cash.

	MONTH	YEAR TO DATE
Beginning Bank Balance	$393.85	$2586.12
Deposits	$5654.92	$23765.92
Withdrawals	$4590.20	$24893.47
Ending Bank Balance	$1458.57	$1458.57

The Ending Balance for the month agrees with the Ending Balance for the Year to Date when Year to Date deposits and withdrawals are included.

A farmer acquaintance was on a single entry computer system. At year end the computer report was showing a profit of approximately $60,000. At tax time he was busy, and since he was on a computer system was pretty sure the data was correct. However, he just did not think he had a $60,000 profit for the year. After reviewing each transaction, the only reliable way to locate an error on a single-entry system, he found the error. A cattle deposit of $10,000 had been put into the computer as $100,000. Since the system was single entry, the computer accepted the entry and printed a report with the $100,000 of cattle income. As a result of this error, the farmer did not have $60,000 of profits as previously reported, but a $30,000 loss. There is a substantial tax difference between a $60,000 profit and a $30,000 loss. The above true incident illustrates the inadequacies of single-entry accounting systems, especially with computers. Imagine the ramifications if the data had been used for management decision making. If the information as presented had been used for a production, marketing, or expansion decision, the consequences could have been very serious for the operator. Encourage your borrowers to graduate from single-entry to double-entry accounting systems to avoid making poor decisions based on inaccurate information.

Commodity Price Analysis

A. Production, Use and Stocks

Most of the crops we deal with; corn, soybeans, wheat, and cotton are produced only once each year. Most farmers also participate in government price support programs and have crop rotation programs that are fairly consistent from year to year. Producers traditionally have shown little willingness to change crops in response to good or poor crop prices. Most producers will continue to produce the same crops they did last year even if the price for that crop is extremely low and has little prospect for improving in the near future. However, their demand for credit will not diminish as crop prices go down, even though their ability to pay off the loan will. Lenders need to be able to make assessments about future commodity prices in order to reasonably assess the risk associated with debt repayment.

With most crops, the annual production available for sale is monitored as follows:

Acres harvested x yield = Annual production
+ Beginning stocks
= Total supply
– Exports
+ Imports
– Domestic use
= Ending Stocks

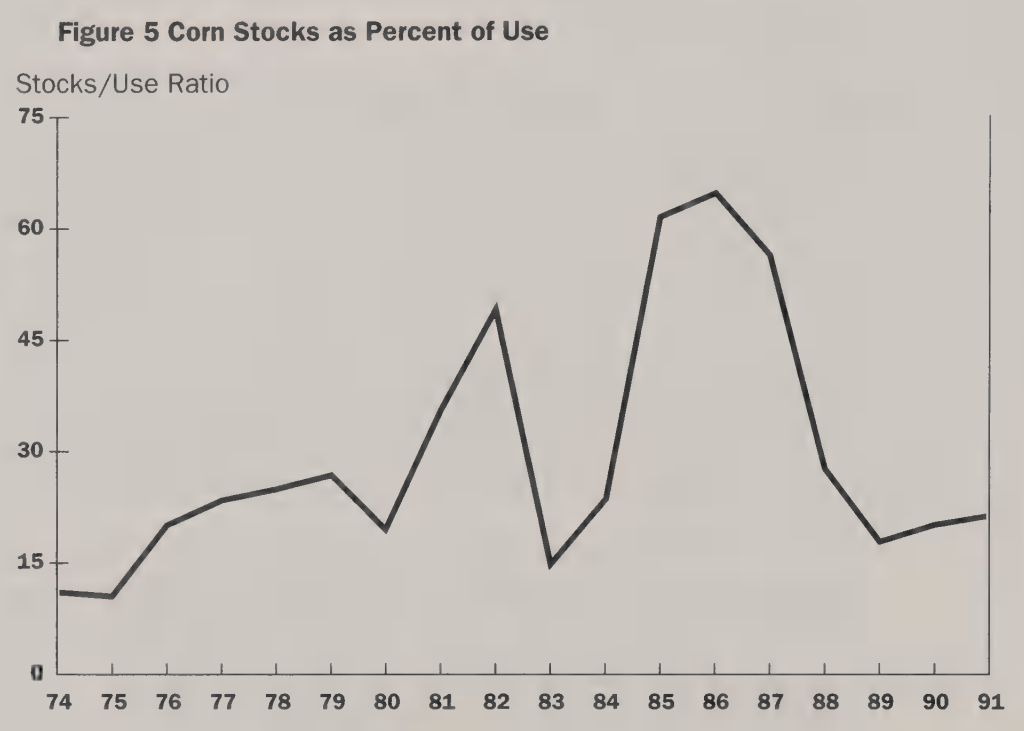
Table 2. Corn Production, Demand, Price

Items	1989/90 Estimate	1990/91 Forecast	Changes from Prior year %
Acres harvested (millions) ..	64.8	66.7	+ 3%
x yield (per acre)	116.2	119.0	+ 2%
= Annual Production (million bushels)	7527	7935	+ 5%
+ Beginning Stocks	1930	1344	– 30%
= Total supply	9460	9281	– 2%
– Exports	2367	2025	– 14%
+ Imports	0	0	0%
– Domestic Use	5748	6020	+ 5%
= Ending Stocks	1344	1236	– 8%
Average Market Price	$2.36	$2.20-$2.50	– 7% to + 6%
Stocks/Total Use	16.6%	15.4%	– 7%

Let's use an example, shown in Table 2 to see how to monitor the corn situation as we go through a production cycle, making judgements about the price of corn as we learn about the supply and demand situation. The information in Table 2 is from the January/February edition of USDA's *Agricultural Outlook* publication, produced by the Economic Research Service. This publication is excellent reading for anyone providing services to U.S. agricultural producers. Annual subscription costs are only $26.00 per year.

Table 2 shows the USDA's projection for the corn markets in the 1990/91 crop year. The

Figure5. Corn Stocks as Percent of Use



USDA has projected acres harvested at 66.7 million, forecasting an average yield of 119 bushels per acre, which would provide a total production for the 1991 year at 7,935 million bushels. This projection of acreage planted and yields were "guesstimates" based on last year's acreage, yields, farm programs, the current price of corn compared to other competing crops (such as soybeans), and a host of other factors. The other elements in Table 2 were guesses also, but were probably heavily influenced by the amounts of exports, and domestic use, etc., that were achieved the previous year.

By June of 1991, the number of acres planted to corn will be pretty well known, and therefore less of a guess than in January 1991. The June number for acreage planted will likely be revised by USDA to reflect the better information they have available in June. By August, the acreage planted number will be known with a fair amount of certainty, and the forecast of yields can be made with more confidence because the growing conditions will have been monitored during the summer. By August, with both acreage planted and yield information known with more certainty, the total production forecast will probably be revised to incorporate the new information.

As market analysts begin to get better information about the size of the anticipated new 1991 corn crop, they have also monitored crop exports, imports, domestic use, and ending stocks. As new information is released, it provides more information on the amount of corn in inventory, or stocks, available to the market before the new crop is harvested. In Table 2 for example, if market analysts observe that corn stocks are building, price tends to fall. Conversely, if stocks seem to be falling, corn prices will increase as competing buyers raise their prices to get access to the lower supply.

In Figure 5 the stocks or inventories of corn are shown as a percentage of total use. Notice that the stocks-to-total use ratio varies substantially from year to year. When we add a line for the price of corn to the stock ratio, Figure 6, notice the price is high when stocks are low, and falls when stocks are at high levels. The price of corn is essentially rationing the stocks among the users. Wheat prices respond similarly to changes in the stocks-to-total use ratio. Notice in Figure 7, when the ratio is low, prices are high, similar to the situation we observed with corn.

Corn prices are not only related to what we know with a fairly high degree of certainty, such as domestic use and exports last quarter, but also to things we don't know with much certainty, such as the total size of the new crop that has not yet been harvested. Returning to our example of projecting corn

Figure 6. Corn Stocks as Percent of Use and Corn Price

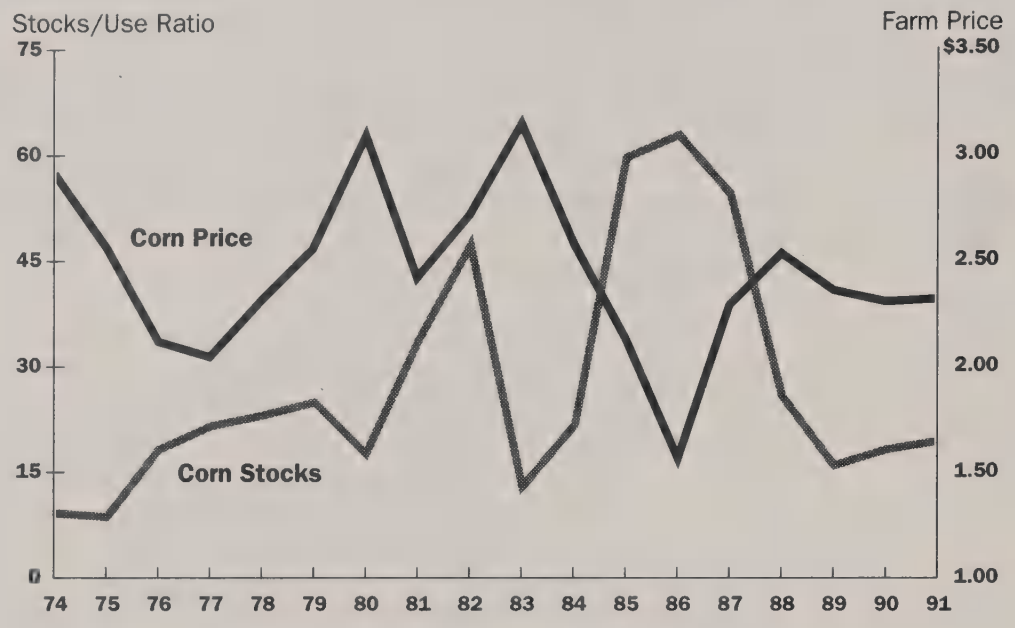
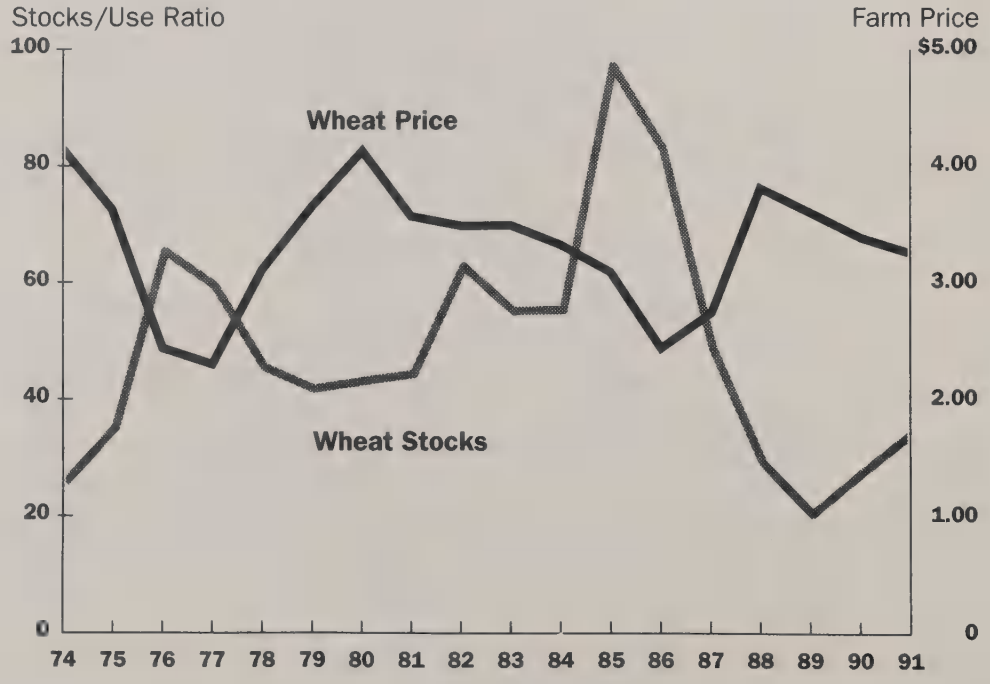


Figure 7. Wheat Stocks as Percent of Use



yields, an error of one bushel per acre in the yield forecast will add, or subtract, about 70 million bushels from the projected stock numbers. That 70 million bushel error will increase or decrease the stock forecast by about 5 percent which is large enough to have an impact on market prices. It is not surprising that commodity prices are very sensitive to news about poor weather during the growing season. A small reduction in yields can have a big impact on stocks, and ultimately on prices. Or, if the U.S.S.R. suddenly and unexpectedly makes a large purchase of corn, it will also reduce the available stocks and send prices higher.

Monitoring commodity prices is a matter of combining the information we know about supply and demand with information we know with much less certainty, anticipating how these factors will affect stock levels, and estimating how market prices will respond to this information. There are many sources of information you might use to help you follow the commodity markets, including USDA, commodity brokers, local elevator personnel, commodity organizations, and processors. You should keep informed of changes in commodity price outlooks and be able to evaluate how changes in prices will affect the risk in your portfolio. In addition, your borrowers expect you to be knowledgeable about commodity markets.

Monitoring livestock prices is similar to monitoring crop prices in that livestock prices also respond to real or anticipated changes in supplies. One significant difference however, is livestock products can not generally be held for long periods in inventory and must be sold when they reach maturity. Producers can not store their market hogs in the hope of receiving a high price in the future. So, when hog numbers increase, without a similar increase in demand, prices will fall. Livestock production also tends to follow fairly long cycles of increasing and decreasing inventories in breeding stock. For example, as cow/calf producers respond to higher prices for feeder cattle, they hold back more heifers to add to the cow/calf herd. As heifers are diverted from the beef pipeline into the cow inventory, it has the affect of reducing the supply of slaughter beef available on the market. As slaughter prices go up to reflect lower supplies, cow/calf operators are encouraged to hold back more heifers, which further reduces beef available for market. This creates the noticeable production cycles in the cattle industry as shown in Figure 8 and a similar, though shorter cycle in the hog sector, shown in Figure 9. These cycles top out when breeding inventories are producing too much meat for the market to absorb at current prices. As the cow/calf operators reduce cow inventories, they put more heifers and cull cows on the market which further increases the beef supply and lowers prices.

Figure 8. U.S. Cattle Inventory 1930-1991

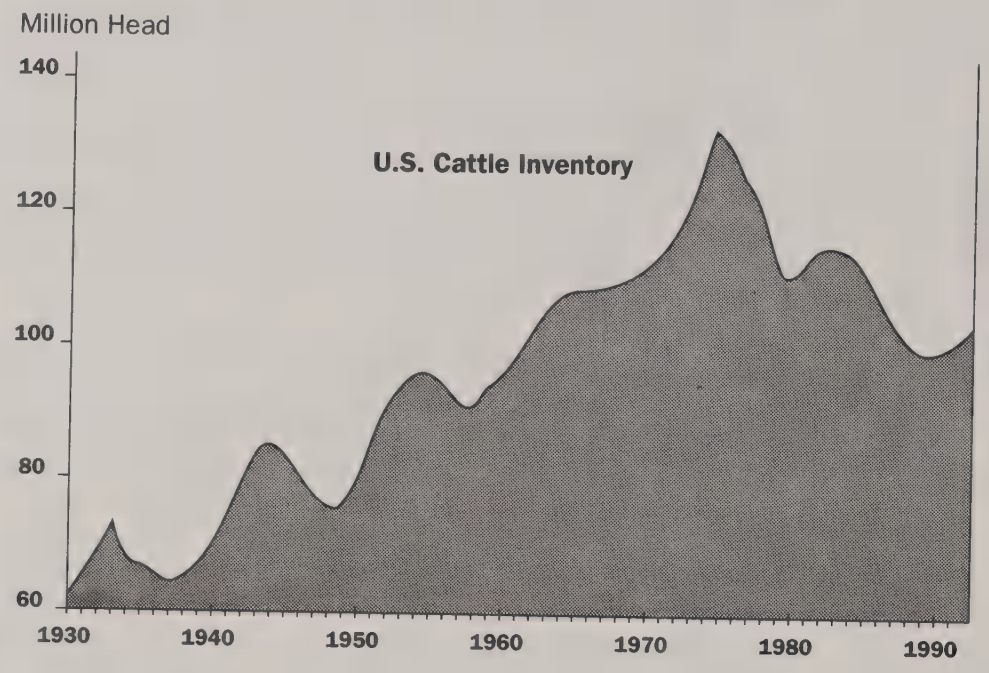
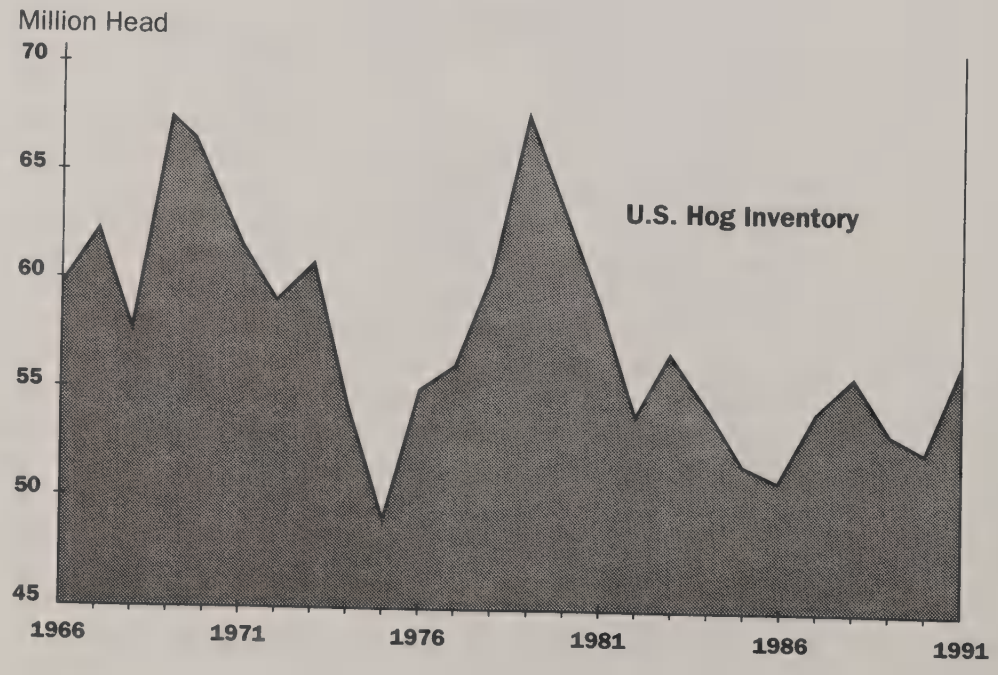


Figure 9. U.S. Hog Inventory 1966-1991



Fruit and vegetable producers also have little flexibility to hold their products, and unless they can store them as processed or frozen commodities, they are likely to be forced to sell even in very low price markets. To avoid some of this market risk, many of these types of commodities are grown under contract with processors who share some price risk with the producers.

Historical and Projected Yields (National Level)

As shown in Figure 10 the U.S. has experienced an increasing yield per acre for the major commodities; corn, wheat, and soybeans. The only years in recent history where yields per acre were low were results of drought in the major production areas. We would expect the trend in improving yield per acre to continue, with downward deviations from the trend usually caused by drought. We might see some large increases in yields as cloning, genetic engineering, and other high technology genetic research begin to be applied to agricultural production. Dramatic increases in yields may be particularly noticeable in some of the minor crops, vegetable, and livestock and poultry production. In the 1970s, the U.S. corn crop was reduced because of a disease, a corn blight, that affected a large area in the corn belt. Some analysts think there is a possibility of again experiencing a significant yield reduction from some disease that spreads rapidly throughout the production areas since many of our major crops have similar genetic background. The soybean crop, and many fruit and vegetable crops can also be affected by frost, resulting in greatly reduced yields and higher prices.

Historical and Projected Yields (Individual Producers)

Crop yields for an individual producer will be more variable from year to year than the national average. For example, Figure 11 shows corn, soybean, and wheat yields for a typical producer over the last few years. You will notice they vary from year to year much more than national yields. Unfortunately, individual producers are affected by local weather disasters such as hail, drought, floods, frost, disease, pests, and a host of other factors. If a producer loses a substantial portion of the crop to adverse weather, it is not necessarily a reflection of poor management ability, just poor luck. However, if the yield reduction was on a crop that could be insured against loss, and the operator did not have insurance coverage, and is not in a financial position to afford the risk of weather-related loss, then poor management might be suspected. Yield reduction due to pests and disease, or weed infestation are sometimes a reflection of poor management, but not in every case. Nature

Figure 10. U.S. Yield: Corn, Wheat and Soybeans

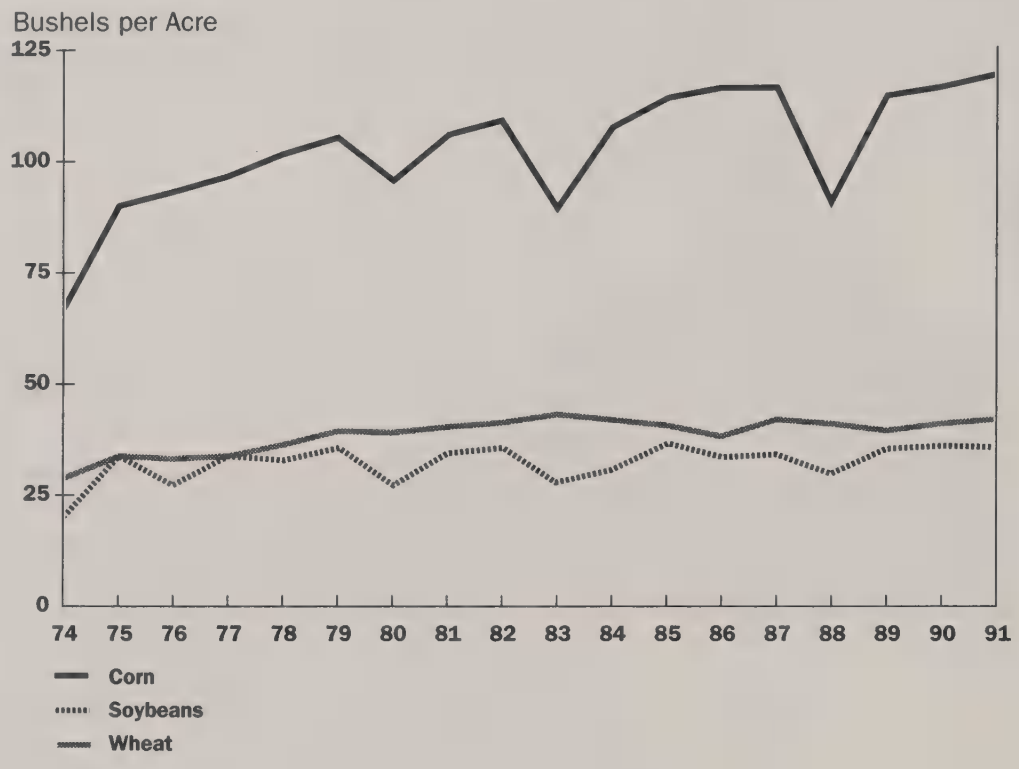
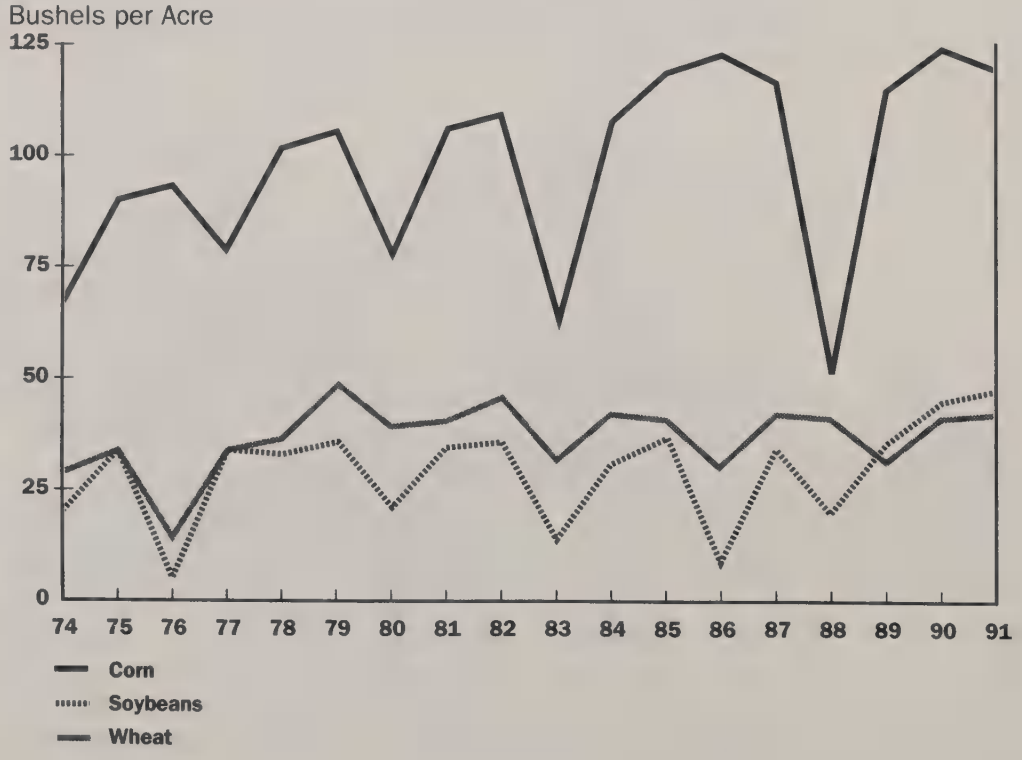


Figure 11. Individual Producer Yields



has a tendency to play dirty tricks on producers, and in some cases, even the best managers suffer yield losses that can not be avoided. Be sure, when judging management ability, to be fair in assessing blame for poor yields, and distinguish between factors that could have been controlled by the manager and those that could not be controlled.

Identifying and Controlling Production Risks

One method to protect operators in a weak financial position is to purchase insurance, if available, to protect against loss of income in the event of unfavorable growing conditions.

Multiperil Crop Insurance (MPCI) is widely available for a large number of crops. It may not only be wise to encourage your borrowers to purchase MPCI insurance, but in some cases, you may want to make it a requirement of the loan conditions. If the borrowers can not financially afford the loss, then requiring insurance protection is a good lending practice. In addition to MPCI insurance, crop hail insurance is also widely available and offers an additional source of income protection in some situations. The decision to purchase crop insurance should not be based on a forecast of weather for the coming crop year. It should be based on the operator's ability to financially manage a yield reduction or total crop loss. Diversification is another source of protection for the risk associated with production. Planting more than one crop not only helps manage production risk, but also helps manage marketing risks. Further diversifying from crop production by adding a livestock enterprise, makes it possible to spread the production and marketing risks for the operation.

However, adding an enterprise doesn't always reduce risk; it can increase risk if the operator has little aptitude for managing the new enterprise. For example, borrowers who want to add show horses to their operation to spread the risk around, may actually increase the financial risks they face. The costs of feed and the reduced profitability of other enterprises caused by management's attention being focused on the new enterprise may more than offset any financial return from the enterprise.

Commodity Marketing

Discipline of the Marketplace.

Many farmers and ranchers admit marketing is the area where they need the most help, yet it is an obvious and important management opportunity to increase profits. They know how to produce, and receive a lot of satisfaction from the production part of the business. But many are not comfortable with, do not enjoy, and are not very good at, the marketing aspects of the business.

As lenders, we need to be extremely cautious to avoid assuming borrowers can grow or raise whatever they want, can sell it whenever they want, and get a profitable price for their production. It is not uncommon that the price our producers receive for a commodity is below their cost of production. In fact, it has often been stated that two thirds of the agricultural commodities are sold at the bottom third of the price range by the producers. In a free market economy there are no guarantees that the selling price for an individual producer will cover all the costs of production and also provide a return to the producer for management, labor, and capital. Some of you may remember back in the early 1980s when Jerusalem artichokes were being promoted as the crop that would give producers financial independence, solve the energy crisis, and feed the multitudes. They were easy to grow and, in fact, are considered a class-one noxious weed in most places. Unfortunately, there isn't much market demand for Jerusalem artichokes and tons of them were thrown away or rotted in storage. Production was not the problem, lack of effective demand was the problem.

The retailers who sell grain and livestock products to consumers are not free to set prices as they choose. They can raise prices only if consumers are willing and able to buy more at current prices. Higher prices at the consumer level will ultimately be passed back to the producers, providing them an incentive to produce more. Lower consumer prices are also passed back to the producer, telling them to produce less because consumers are unwilling to pay the current price.

This is the discipline of the market place. Those who produce commodities that consumers are willing and able to buy, can make profits. Your borrowers must be able to sell to a market that covers the cost of production, and not rely solely on their ability to produce to provide them with financial rewards.

Figure 12. Per Capita Meat Consumption

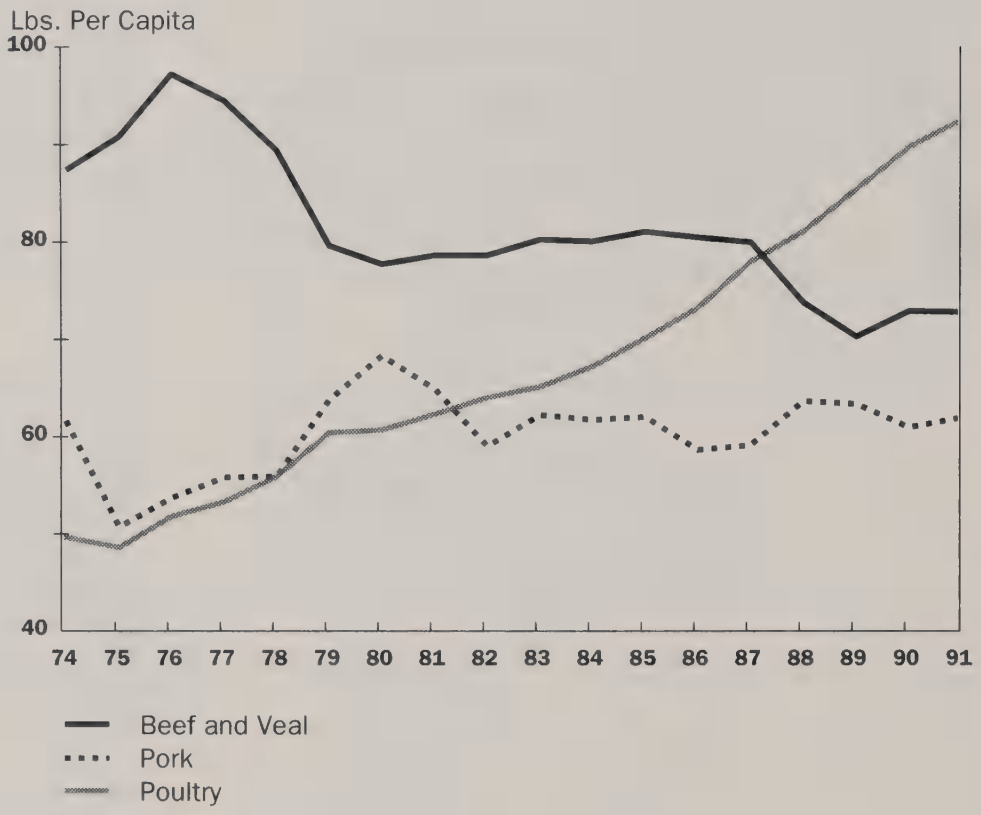
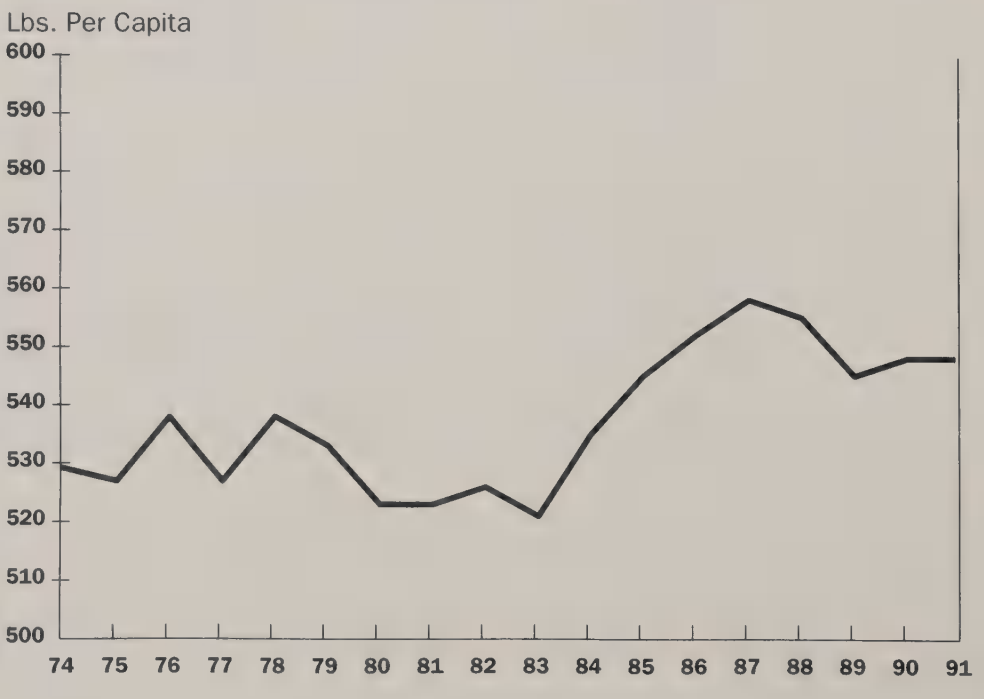


Figure 13. Per Capita Milk Consumption



Changing Consumer Demand

Over the past ten years we have witnessed a dramatic change in consumer demand for meat and poultry products. In Figure 12 notice the consumption of beef and veal has fallen from 85 lbs. per capita in 1974 to 75 lbs. per capita in 1991. Poultry, on the other hand, has increased from 50 lbs. per capita to 70 lbs. over the same time period. Many factors are involved in this change in consumer preferences. They include the relative cost of beef compared to poultry, concern about high- fat diets, fast and convenience food preferences, and an improvement in the mix of poultry-based foods such as turkey ham. Better marketing in the dairy industry has resulted in a turnaround in per capita consumption of milk as shown in Figure 13. These changes in consumption patterns reinforce a point made earlier that the discipline of the marketplace rewards those who produce what consumers want and are willing to pay for. We have also seen improvements in commodity marketing in recent years, which explains some of the shifts in consumer preferences. Innovations have been made in milk and pork products, poultry has been processed into new products, and innovations in packaging designed for particular markets (such as the fast-food industry) have increased demand.

Table 3. Borrower Brown
Summary Cash Flow Projection, 199X

	June	Nov.	Dec.
Income Accounts			
Bean Sales	$10,000	$ 0	$18,000
Corn Sales	4,000	10,000	22,000
Gov't Payments	14,000	0	0
Gross Profit	28,000	10,000	40,000
Expense Accounts			
Chemicals	4,000	0	4,000
Fertilizer	10,000	15,000	0
Fuel	1,000	1,000	1,000
Rent	0	8,000	0
Cash Expenses	15,000	24,000	5,000
Cash Profit	13,000	-14,000	35,000
Interest Expense	1,000	1,000	10,000
Cash Profit after Interest			
Family Income	0	0	0
Family Expense	2,000	2,000	2,000
Family Taxes	0	0	0
Net Family Costs	2,000	2,000	2,000
Available After Living	10,000	-16,000	23,000
Assets Purchases	8,000	0	0
Available After Assets	2,000	-16,000	23,000

Credits' Role in Market Timing

Let's consider a situation where the design of a loan repayment schedule plays a strong role in a borrowers marketing decision. The abbreviated cash flow projection of Borrower Brown shown in Table 3 indicates that a large loan payment of $10,000 is scheduled for repayment in December. The source of repayment is probably the sale of corn and soybeans. If the crop isn't sold in December, Borrower Brown may need to borrow additional money to pay December's operating and family living expenses. In addition, he will not be complying with the terms of the loan agreement if he does not sell his corn and beans in December to meet the loan payment schedule.

In this case, the loan agreement is playing a very strong role in

Borrower Brown's marketing decision. Without considering many marketing alternatives, or even the price of corn in December, there seems to be a very strong incentive to sell the corn and soybeans to pay off the loan. This could be a very poor marketing decision, and also a poor financial management decision, if December turns out to be the seasonal low price for corn that year.

There are a few options that the loan officer and Borrower Brown might consider when structuring the loan, that would encourage more flexibility and thought in the decision to market the crops. One possibility would be to sell the corn, or at least part of the crop before December by using the futures or options market. For example, if a good pricing opportunity came available in July, part of the crop could be sold using futures if the marketing plan called for such an action and if the lender was willing to finance possible margin calls. Though FmHA lenders have little flexibility in structuring loans to include margin-call expenses, guaranteed loans can include provisions for margin-calls. However, without a written marketing plan, and the understanding and commitment from the lender, the chance of actually accomplishing this alternative marketing approach is very remote. A second alternative is to extend the loan repayment date beyond the harvest period, and perhaps well into the next year so the operator can consider the impact of income taxes on marketing decisions. Again, without a written marketing plan and an informed lender, good marketing decisions probably will not happen. Remember, delivering the commodity to the purchaser and selling the commodity do not have to occur at the same period of time. Commodities can be sold prior to delivery using the futures markets or through forward contracts. Commodities can also be delivered to the buyer with pricing taking place sometime well after the delivery was made. But be sure to consider the buyer's financial stability before making delivery of a commodity that will be priced and sold sometime in the future.

Income Tax Considerations in Marketing

The money borrowers have available to repay the loan is gross revenue, minus operating expenses, family living expenses, and taxes.The Federal government likes to receive its share, and tends to get in line for its share before the lender is paid. You can help borrowers plan to minimize income taxes by helping them plan both their income and operating expense. Many agricultural producers operate on a cash basis for income tax purposes, and often have the option of accelerating or delaying both income and expense items at the close of a tax

year. If income is high one year, it might make sense to purchase inputs that will be used in next year's production. Returning to the case of Borrower Brown in Table 3, notice that he is planning to purchase $15,000 of fertilizer in November. For tax planning, that might make perfect sense in this operation, but we don't have enough information to decide if it is a good management decision. If he decides not to sell the corn and soybeans in December, but waits until January or February, then delaying the fertilizer purchase until the new tax year may have a significant impact on income taxes due the following year. Naturally, good records are essential for good tax planning. A conscious effort is necessary to execute a tax-minimizing plan. A lender who understands taxes, and structures loans to assist in the implementation of the tax plan can often significantly improve the total net dollars available to service debt. But remember, the objective is to maximize net income, not to pay as little tax as possible. Many poor financial decisions have been made in an effort to minimize taxes as many investors in machinery, commercial real estate, and other "tax shelters" have found out in the recent past.

Perishable vs. Storable Commodity Marketing

Many agricultural commodities cannot be stored, eliminating the possibility of putting them in inventory for sale at a future date. Market hogs and cattle, milk, and most fresh fruits and vegetables need to be put on the market when they mature. However, they too, can often be sold prior to delivery either through the use of futures or options, or by forward contracting either with processors or others interested in marketing the commodities. If the borrower cannot handle the financial risk associated with selling production when it matures, make sure the loan structure does not encourage that type of marketing program. Also, help borrowers evaluate marketing alternatives that improve the prices they receive and the debt repayment ability of the operation.

Producers who are a long distance from the market, or served by inadequate storage, handling and processing facilities, have fewer options in their selection of production enterprises. Due to the greater cost of shipping and handling, they end up selling their products for less. The cost of marketing commodities, including shipping, shrink, and quality degradation is paid by the producers through lower prices offered by the commodity buyers. You will notice the basis for corn at different market locations is larger as the point of purchase increases in distance from access to the major markets along the Mississippi River. In fact, transportation costs

play such an important role in determining prices that producers receive for their commodities, that often commodities can only be profitably produced in close proximity to processing facilities. Examples include turkeys, broilers, sugar beets, and many fruits and vegetables.

Cost of Production

Analysis of Costs of Production

In nearly all farm and ranch operations most of the revenue received from the sale of agricultural commodities is spent on inputs to produce the commodity. Production expenses range from 50 percent to 80 percent (or more) of the gross sales. Table 4 provides us with an example of Borrower Brown's profit or loss statement that shows the Gross Sales at $122,000 from the sale of crops for the Jan/Dec time period.

Now, let's focus on the expenses that were incurred to produce these crops. A percent is shown to the right of each expense item which represents its percent of sales. For example, chemical expenses were $8,000 and were 7 percent of the Gross Sales. Notice that total cash expenses account for 61 percent of the operation's gross sales.

Table 4. Borrower Brown
Cash Basis Operating Profit or Loss Statement, 199X

Income Accounts	**December**	**Jan/Dec**	**% Gross Sales**
Bean Sales	$21,000	$51,000	42
Corn Sales	13,000	34,000	28
Gov't Payments	6,000	37,000	30
Gross Sales	40,000	122,000	100
Less Cost of Goods Sold			
Cost of Goods Sold	0	10,000	8
Gross Profit	40,000	112,000	92
Expense Accounts			
Chemical	4,000	8,000	7
Fertilizer	14,000	24,000	20
Fuel	3,000	9,000	7
Rent	2,000	17,000	14
xx	xx	xx	xx
Cash Expenses	32,000	75,000	61
Cash Profit from Operations	8,000	37,000	30
Non-Operating Income/Expense			
Interest Expense	3,000	10,000	8
Interest Income	1,000	2,000	2
Cash Profit after Interest	6,000	29,000	24
Less Estimated Depre.	2,000	11,000	9
Total All Expenses	36,000	104,000	85
Net Profit Before Taxes	4,000	18,000	15

Many non-farm businesses face a similar situation where their cash expenses are a very large proportion of Gross Sales. When they consider their options for increasing their net income they have several possible choices. They can attempt to increase revenues by either increasing production or increasing the price of the products they sell. Another possibility would be to reduce expenses, because with revenues constant, any reduction in expenses will result in a dollar-for-dollar increase in net income. So how do General Motors, the airlines, IBM, and the Wall Street Bankers adjust their operations to bolster net income? They slash expenses by implementing travel bans, and new hiring freezes, and laying off employees. These companies find it is much more effective to cut expenses than to increase revenues when they need to solve problems of low net income.

So, if you are working with a borrower who is having problems with low net income, don't assume the solution is to find a way to increase cash receipts by producing more, or hoping to sell what he already produces at a higher price. Look at the borrower's expenses for items that could be cut or eliminated. Usually the sale of the new four-wheel-drive pickup would reduce expenses, would not have a negative effect on production, and result in an increase in net income. Layoffs probably won't work on many farms unless you can think of something else for grandpa to do.

Table 5. Leverage Impact on Net Worth, 1970s

	Debt/Equity 0	Debt/Equity .5
Equity Capital	$100,000	$100,000
Debt Capital	0	50,000
Total Capital	$100,000	$150,000
Income when rate earned on investment is +15%		
Returns to total capital	$ 15,000	$ 22,500
Cost of debt (9%)	0	4,500
Before-tax return on capital	$ 15,000	$ 18,000
After-tax net return on capital (tax = 20%)	$ 12,000	$ 14,400
Rate earned on equity (investment)	12%	14.4%
Income when asset values increase +10%		
Increase value of assets	$ 10,000	$ 15,000
Rate earned on equity (investment + appreciation)	22%	29.4%

Let's take another look at the previous table and consider how trends might provide some insight into how to improve this operation's net income. Notice in Table 4 that the estimated depreciation expense is $11,000, or about 9 percent of Gross Sales. If both the dollar value of depreciation and the percent of sales has steadily increased over the past few years, investigate the reason behind the increase in these expense items. It could be that old and worn out machinery is being replaced, or the borrower has a case of "green fever" and is contributing more than his fair share to the local John Deere dealers' total sales. It is especially important to check this out if these are credit purchases, resulting in an increase in debt load and interest expense. We might also notice that total cost of production, as a percentage of sales, has been steadily increasing over time. This type of trend cannot continue very long before the operation is no longer profitable. From the information provided in this table we will not be able to determine what is causing the adverse income and expense trends. The problem could be marketing, yields that may be too low, or perhaps production and operating expenses that are out of control. More information is required and a discussion with the borrower is probably in order to uncover the source of the problem.

Impact of Changes in Cost of Production

Assume for a moment that expenses in this operation increase by 5 percentage points from 85 percent to 90 percent. That 5 percentage-point increase in expenses causes an equal percentage-point reduction in net profit before taxes, reducing it from 15 percent to 10 percent of Gross Sales. In this case, net profits would fall by about 33 percent if expenses increased by about 5 percent. So keeping expenses in check is extremely important for effective management of the bottom line.

Leverage Impacts on Net Worth

Much of the farm financial crisis of the 1980s was caused by the use of high leverage during the 1970s and by including inflationary increases in land values as if they were income earned from the operation of the farm or ranch. In the 1970s, a farmer could borrow money at about 9 percent interest and expect a return of about 15 percent on total assets. For example in Table 5, if an operator had $100,000 in equity capital, and borrowed no money, he made $12,000 a year after taxes from operations. With inflation of 10 percent, he made another $10,000 from appreciation in asset values. With no debt, and $100,000 in assets, the total operating income and appreciation in assets was $22,000, for a return on equity of 22 percent.

However, leverage was one of the favorite terms of financial managers in the 1970s, and the impact of leverage on return to equity was very impressive. For example, another operator in Table 5 added to his asset base by borrowing another $50,000 giving him a total of $150,000 in assets to work with. He made money on the borrowed money in two ways. First, his rate of return (15 percent) was higher than the cost of money (9 percent). Notice in the table, column 2, that the operator made 14.4 percent on his equity while the more conservative farmer was making 12 percent. Secondly, he made inflationary gains on both assets he owned and the assets purchased with borrowed money. This boosted the rate of return on his original $100,000 in equity to 29.4 percent. More conservative operators who didn't borrow did not make inflationary gains off other people's money nor on the difference

Table 6. Leverage Impact on Net Worth, 1980s

	Debt/Equity	
	0	.5
Equity Capital	$ 100,000	$100,000
Debt Capital	0	50,000
Total Capital	$ 100,000	$150,000
Income when rate earned on investment is –15%		
Returns to total capital	– $ 15,000	– $ 22,500
Cost of debt (9%)	0	4,500
Total return on capital	– $ 15,000	– $ 27,000
Rate of return equity (investment)	– 15%	– 27%
Income when asset values decrease 10%		
Decrease in value of assets	– $ 10,000	– $ 15,000
Rate earned on equity (investment + depreciation)	– 25%	– 42%

between the rate of borrowing (9 percent) and the rate of return to operations (15 percent). In such an environment, it is not surprising that more was better, and high leverage was a popular financial management tool.

Now look at Table 6. When low prices were experienced in some years of the 1980s, it was not hard to lose 15 percent through the farming operation. And with deflation in land values during those years, producers could lose another 10 percent on the value of their assets. Even the case of the conservative farmer in Column I, a loss of $25,000 resulted from the combination of losses in operating income and decreases in asset values.

But, look what happens to farmers with higher leverage in Table 6. The farmer with moderate debt loses 42 percent of his equity in one year under the same conditions described above. With persistent losses in operating income, and several consecutive years where land values fell by 15 to 20 percent each year, it is easy to understand how highly leveraged producers were affected during the farm financial crises of the 1980s.

Value of Assets

Land Values

We all learned how to cure a sick loan during the 1970s. All that was needed was to increase the value of the assets, particularly land values, by about 10 or 20 percent and it did wonders for improving the operator's net worth and debt-to-asset ratio. Unfortunately, we also learned what happens to a good loan in the 1980s when we had to subtract 10 or 20 percent from the land assets; it had terrible consequences on net worth and debt-to-asset ratios.

Figure 14 shows the year-to-year change in the average value of land in the U.S. since 1910. Notice the very rapid increase in values in the 1970s and equally dramatic decreases in values during the 1980s. The 1980s was a period often referred to as the "farm crisis" when falling farm cash receipts left many farmers unable to service the debt they had accumulated during the 1970s.

Figure 15 shows real net farm income, in 1982 dollars, since 1945, and the change in land values over the same time period. Notice the general downward trend in real farm income since 1945, interrupted by a relatively short period during the 1970s. Land values during the 1970s continued to increase, even though the farm income had resumed its downward trend during most of that decade. Ultimately land values increased to a point that could not be justified by the income produced by the land, and values began falling in the 1980s. The popular opinion in the 1970s was that land values would continue to rise, partly because farm incomes would continue to rise propelled by ever increasing demand for exports of U.S. agricultural commodities. However, in the 1980s crop exports did not increase and in fact, often fell, reducing farm income. The reduction in farm income left many farmers with debt costs that could not be covered from the income produced by the land, often resulting in forced liquidation of assets. As farm income finally improved in the late 1980s, land values began to recover once more.

We forgot during the 1970s that the value of an asset, land in particular, is closely related to the value of the production it produces. If the income from the land's production increases, the value of the land increases.

If we use only comparable sales to establish land values, we are likely to fall into the trap that many farmers and lenders got caught in during the 1970s. Rather than using only comparable

Figure 14. Change in Per Acre Value from Previous Year

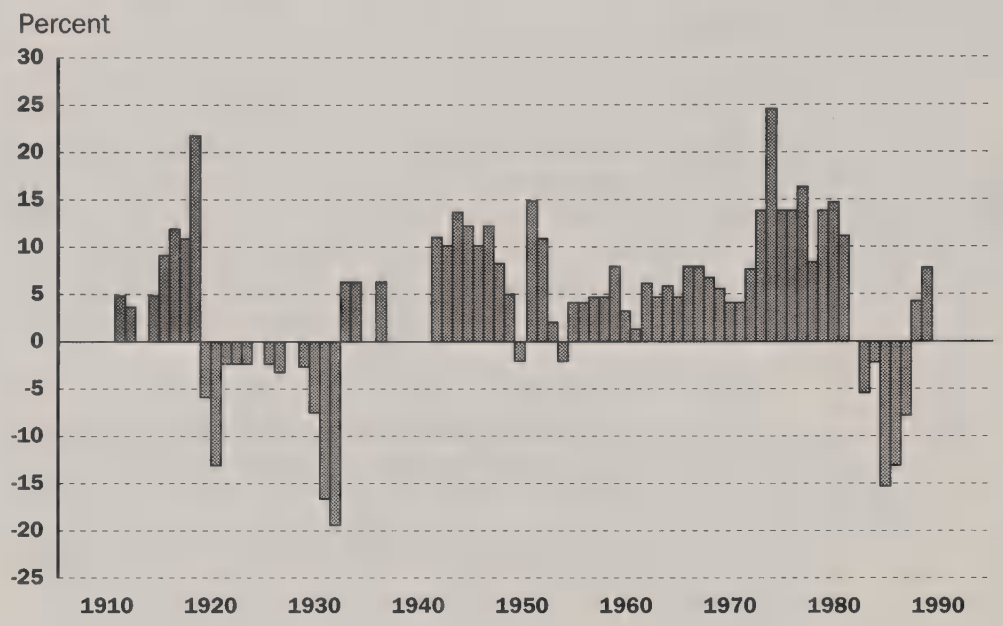
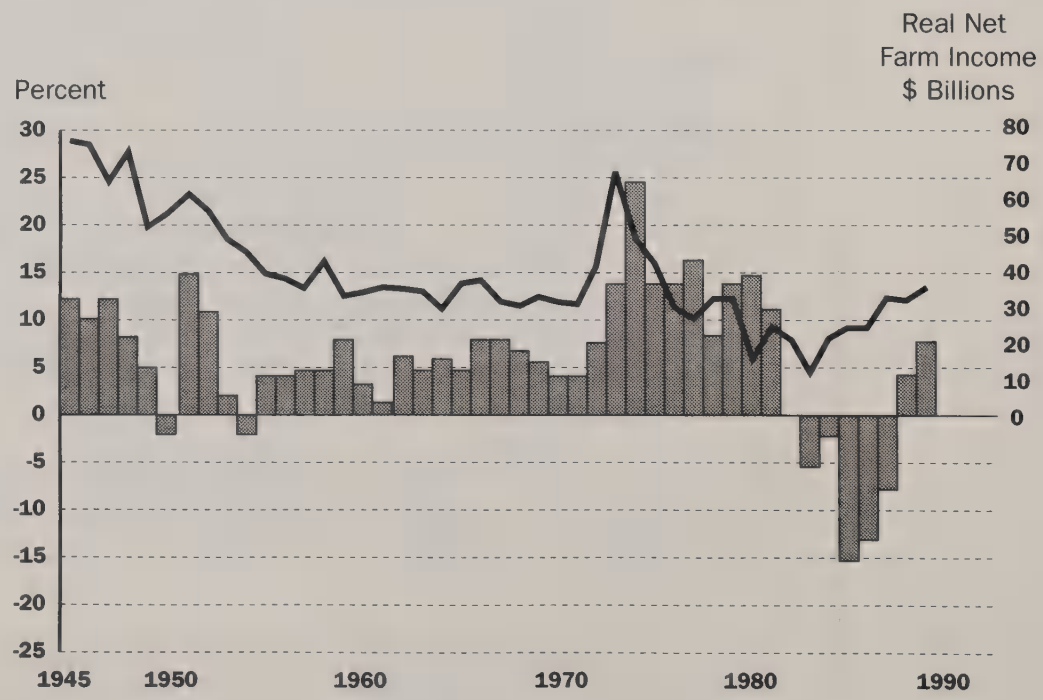


Figure 15. Change in Per Acre Value from Previous Year and Real Net Farm Income



sales, we need to use the value of the income produced by the land, or the economic-value approach, to determine land values. We also need to project whether the income is likely to increase, decrease, or remain the same in the future to anticipate future land values. Later in this seminar we will be reviewing how to use the economic value approach to value assets. Meanwhile, remember that what someone else will pay for land may not be a good indication of its value, and that land prices go down as well as up.

Machinery Values

Machinery values exhibited many of the same price movements as land did during the 1970s and 1980s. It was not uncommon for used tractors to sell for more than the original cost during the 1970s. In fact, the demand for farm machinery during that period was so high that deliveries on new equipment extended to months. This situation also changed during the 1980s when much of the equipment purchased in the late seventies was put back on the market in liquidation and foreclosure sales.

Part of the change in machinery values was related to a change in the tax laws, specifically the loss of investment tax credits for new machinery purchases. What makes a good investment decision for new equipment covered by investment tax credits may not be a good investment decision once the tax credits are eliminated. Changing tax laws have an impact on investment decisions by changing the costs of machinery and equipment purchases.

Environmental Factors

The increased public concern about the environment will cause changes in the way producers of agricultural commodities use land and water resources, and production inputs, such as fertilizers and chemicals. We will begin to be more concerned about both the financial and environmental impacts of management decisions. Practices that degrade the environment will not be tolerated and laws will be enforced to make sure producers comply with better management practices. The cost of compliance may affect the profitability of the operations and ultimately the financial risk of the borrower or lender.

Lending Risks Associated with Environmental Concerns

As a lender to the agricultural community you know you are going to have a bad day when you have a very big loan with an apple producer and T.V.'s "60 Minutes" run a special feature on Alar. Or you have just foreclosed on a loan and the Environmental Protection Agency found some 55 gallon drums filled with an unidentified black, oozing substance on the property. Or, your "big hitter" borrower just received a citation for not having check valves on the center pivot he is using to apply nitrogen through the system. It might be a really bad day when your dairy farm borrowers who are using bovine somatotropin (BST) start having trouble with anything, whether it is related to BST or not.

As the concern increases about environmental issues, hazardous wastes, toxic chemical use, groundwater contamination, genetic engineering, wetland preservation, and a host of other factors, lenders must keep informed about the risks they face in the loan portfolio. The health and safety of the community where you work, and your own health, might be at risk unless you are knowledgeable about the potential environmental hazards associated with the agricultural community.

Property Ownership and Clean-up Responsibility

The Federal government has identified over 1000 materials that are hazardous, and between 30,000 and 50,000 abandoned hazardous waste sites throughout the United States. Most of the abandoned hazardous waste sites are in rural areas, and you happen to be lending money in rural areas. The Farm Credit Bank in St. Paul, among other lenders, is very concerned about lender liability and has developed some of the following guidelines to help their loan officers access environmental risks.

Potential Liabilities

- **All costs of removal or remedial action incurred by the state or federal government, consistent with a prescribed "national contingency plan"**
- **Any other necessary costs of response incurred by any other person consistent with the plan**
- **Damages for injury to, destruction of, or loss of natural resources**
- **The costs of any health assessment or health effects study conducted by a prescribed Federal agency**

If you or your borrower get involved in the cost of remediation or cleanup of a contaminated site, a lot of time and money will be involved. For example, consider the cost of removing an underground storage tank and excavating the contaminated site;

- To remove a tank with localized surface contamination costs $10,000 to $30,000.
- If the site is contaminated around the area of the tank, add a zero to the costs $100,000 to $300,000.
- If the groundwater has been affected by the tank, add another zero to the cost $1,000,000 to $3,000,000.
- If the contamination has moved off site, cleanup becomes more difficult and costly, and "third party lawsuits" will likely result in significantly more cost than the actual clean-up.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) establishes many of the rules that govern the responsibility and liability related to environmental risks. Congress enacted CERCLA because other Federal statutes were not effective in providing reimbursement for cleanup of contaminated sites. Under certain conditions, the Environmental Protection Agency can cleanup a site and then seek reimbursement from "responsible parties". Who gets included in the definition of "responsible parties" has changed over time, and will probably be modified as new regulations are passed. Currently, "responsible parties" include present, and former owners of the property. Financial institutions that have taken title to a property through foreclosure have been included in the definition of "responsible parties".

A single responsible party can be assessed for the entire cleanup costs even though others contributed to the contamination. Current owners are liable for all cleanup costs even if the hazardous substance was not actually deposited on the property during their ownership. In addition, former owners, who knew about a hazardous release on the property, and failed to disclose that knowledge when transferring the property, are liable.

The amount and scope of the potential liability is immense! It includes:

- All costs of removal or remedial action incurred by the state or federal government, consistent with a prescribed "national contingency plan".
- Any other necessary costs of response incurred by any other person consistent with the plan.

Credit and Financial Risks

- Impairment of a customer's financial condition and collateral values
- Inability to foreclose on a loan due to potential costs of ownership of a contaminated property
- Liability for cleanup of property acquired through foreclosure, voluntary deed or bankruptcy
- Impairment of property value during ownership due to adverse market response and/or cost of cleanup
- Civil damages from third party actions

Due Diligence

- Identifying potential or actual environmental problems on the customer's property or in the customer's business
- Evaluating the nature and severity of the problems
- Appropriately addressing the problems in the credit and loan restructuring process

- Damages for injury to, destruction of, or loss of natural resources.
- The costs of any health assessment or health effects study conducted by a prescribed Federal agency.

With the average cost of clean-up of a hazardous waste site around $1,000,000, we have very few farmers or ranchers who could financially survive that kind of a financial liability, and if the property is collateral for a loan, the lender may take a financial hit also. In addition, there is an increasing trend to extend the liability to affiliated parties generally considered to have "deep pockets", and financial institutions are often perceived as having these "deep pockets".

There are a number of credit and financial risks that are of concern to lenders and their customers. They include:

- Impairment of a customer's financial condition and collateral values
- Inability to foreclose on a loan due to potential costs of ownership of a contaminated property
- Liability for cleanup of property acquired through foreclosure, voluntary deed or bankruptcy, or due to perceived management involvement in a loan workout
- Impairment of property value during ownership due to adverse market response and/or cost of cleanup, and
- Civil damages from third party actions

To help protect the lender from liability associated with environmental contamination, loan officers must practice "due diligence" in the process of gathering information to support a well informed credit decision. This process includes:

- Identifying potential or actual environmental problems on the customer's property or in the customer's business
- Evaluating the nature and severity of the problems
- Appropriately addressing the problems in the credit and loan restructuring process

If the loan officer investigation uncovers potential hazards, additional investigation by an environmental expert to test and document contamination may be required. Lenders must adopt policies and procedures to insure environmental risks are identified and evaluated during the lending process, and implement practices that invoke the protection of appropriate law.

There are several actions loan officers can take to practice "due diligence" during the credit analysis process, before approving a loan restructure or workout plan, and prior to taking title to the property. To avoid lender liability for environmental cleanup or remediation, seek legal advice prior to taking title to a property if significant concerns are identified. Some cases may involve hiring an environmental expert to help identify potential problems. Do not take title to properties where cleanup costs and other potential costs exceed market value. If you have acquired a property, do not allow tenants to engage in practices or enterprises that involve handling, use, and disposal of hazardous substances without prior consent and proper authorization or permits.

When in doubt about a possible lender liability associated with a piece of property, or about risk minimizing or avoidance actions, be sure to seek counsel regarding the legal implications of the actions and the documentation that may be required. The environmental protection legislation will continue to evolve as society becomes more concerned about environmental hazards and rural America is where many of the hazards are found.

DUE DILIGENCE FOR LOAN OFFICERS

- **Get legal or environmental advice prior to taking title to problem property**
- **Do not take title to property where clean-up costs exceed market value**
- **Do not allow acquired property tenants to handle, use or dispose of hazardous substances**

*U.S. G.P.O.: 1991-556-517